

found that "the cottonwood most common in Washington, known as the South Carolina poplar, could not be infected by the uredo form [of *Melampsora* sp.] from the common Western cottonwood, although these two poplars are classed by some as being the same species. Moreover, the rust does not occur in nature on the South Carolina poplar, but is very abundant on the Western cottonwood, and even occurs in Washington on the few individual trees of that type growing in the city." The cottonwood most common in Washington, "known as the South Carolina poplar," is *P. deltoides*. The few trees of the other, called by Mr. Carleton "the Western cottonwood" are the same individuals upon which Mr. Tidestrom based his report of *P. virginiana* "in cultivation."

Doubtless our poplars hybridize extensively. This fact renders their study difficult, especially if herbarium material only is dealt with. Botanists who are favorably situated to do so, would, I am sure, confer a great favor upon Mr. Tidestrom by communicating to him poplar specimens and notes concerning them.

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NOTES ON BOTRYCHIUM FROM TENNESSEE.—The occasion of these notes on the Genus *Botrychium* was the finding of a peculiar teratological specimen of *obliquum* Muhl. Upon the sterile frond there are several pinnae which bear groups of well developed sporangia. In every case in which there are several sporangia together a definite rhachis connects them. This rhachis is composed of a portion of the frond which is slit out of the leafy tissue. A line of tissue of lighter green color than the rest, runs out to this rhachis. The sporangia are perhaps a little smaller than the average of the sporangia that are borne on the fertile frond, and the spores are between four and five percent smaller than the normal. The viability of the spores was not tested, but in appearance they were in no appreciable way different from the normal. There was only the one plant of the species found in the locality, which was not far from Knoxville.

This species does not seem to be very common in the parts of East Tennessee which have been examined by the writer, and there are only three specimens of the plant from the entire state in the university herbarium. Two of these are from Middle Tennessee and the other from West Tennessee. The writer has collected it from only one other

place in this section of the state in addition to the one described above, and in both of these localities it was found very sparingly.

The only other species of *Botrychium* from Tennessee represented in the herbarium is *B. virginianum* (L.) Sw. There are specimens from each of the grand divisions of the state, and the writer has gathered it near Knoxville. The plant now classified as *B. obliquum* var. *dissectum* (Spreng.) Clute is reported by Gattinger in his Flora of Tennessee as occurring with these two, but there are no specimens of this variety in his collection which forms a part of the university herbarium.—ERNEST SHAW REYNOLDS, University of Tennessee, Knoxville, Tennessee.

AN IMPORTANT PUBLICATION ON LICHENS.—New England botanists who would like to have some knowledge of our lichens, but who have been prevented by lack of literature will welcome the publication of Prof. Bruce Fink's "Lichens of Minnesota."¹ The work consists of a general introductory account of the structure and reproduction of lichens, followed by a descriptive catalogue, furnished with copious keys, and illustrated with photographs of unusual excellence. Each species is described at some length, and notes as to habitat and geographical range are added. It should be understood, however, that this is not a popular handbook, doing for the lichens what Dr. Grout's serviceable "Mosses with a Hand-Lens" does so well for that group. Prof. Fink has not intended to prepare a popular work, and it is doubtful if such a book would be satisfactory, since the classification of lichens must necessarily be based upon microscopic characters. Unless he has access to an herbarium, the path of the beginner in the study of lichens is not an easy one, at best, but with a microscope at one's disposal, with the patience which all scientific work requires, and with Prof. Fink's book, one is better equipped than has ever before been the case. Of the 439 species and varieties found in Minnesota, over 300 occur also in New England, and while there are some of our familiar New England lichens which do not extend so far west as Minnesota, the work is the most convenient manual available for students throughout the northeastern states. For the specialist this publication is of great significance, as it represents the culmination of fourteen years of careful work, with the matured views of Prof. Fink concerning the considerable number of species which he treats.—L. W. RIDDLE, Wellesley College.

¹ Fink, Bruce. The Lichens of Minnesota. Contributions from the U. S. National Herbarium, vol. 14, part 1, pp. 1-269, with 51 plates and 18 text-figures. Published by the Smithsonian Institution, Washington, D. C., June 1, 1910. A few copies may be obtained from the Superintendent of Public Documents, Government Printing Office, Washington, D. C., at fifty cents each.